ABSTRACT

Background: Improving the retention of zirconia crowns is desirable in order to reduce the decementation of crowns and fixed partial dentures. This can be achieved by creating micromechanical retention using various surface treatments. Therefore, it becomes necessary to constantly compare and re-evaluate the influence of different surface treatment methods on the bond strength .

Aim: The aim of the study is to compare the effectiveness of two different surface treatments on the retention of zirconia copings using dual cure resin cement

Materials and Methods: Twenty four zirconium copings samples were prepared based on standardised die and were divided into three groups and each group was subjected to following surface treatments

Group A - surface treatments : no treatment

Group B - sandblasting with 110 µm alumina

Group C - Er-YAG Laser surface treated

The samples were surface disinfected and cemented with Dual cure resin cement to the die and embedded in stainless steel blocks of to check bond strength on the universal testing machine. Statistical analysis used-data was analyzed using one-way ANOVA and a Post Hoc test.

Results: Analysis of the data showed that the highest bond strength values were obtained with laser treatment (20.50 ± 0.8 Mpa). The lowest values were obtained with control group (4.50 ± 0.5 Mpa) and sand blasted group shows 10.50 ± 0.8 Mpa . Laser treatment increased the bond strength values significantly ($p<0.05$).

Conclusion: Surface treatments increased the bond strength between zirconia and resin cement and Erbium YAG laser could be an effective surface treatment for increasing bond strength.

KEYWORDS: Er:YAG laser,Resin cement, Zirconium oxide,CAD- CAM,Alumina